FortiOS™ Handbook

Managing Devices for FortiOS 5.2

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Introduction

Welcome and thank you for selecting Fortinet products for your network protection.

This chapter contains the following topics:

Before you begin

Before you begin using this guide, please ensure that:

- You have administrative access to the web-based manager and/or CLI.
- The FortiGate unit is integrated into your network.
- The operation mode has been configured.
- The system time, DNS settings, administrator password, and network interfaces have been configured.
- Firmware, FortiGuard Antivirus and FortiGuard Antispam updates are completed.
- Any third-party software or servers have been configured using their documentation.

While using the instructions in this guide, note that administrators are assumed to be super_admin administrators unless otherwise specified. Some restrictions will apply to other administrators.

How this guide is organized

This FortiOS Handbook chapter contains the following sections:

Managing “bring your own device” describes device monitoring, devices, device groups, and device policies. The administrator can monitor all types of devices and control their access to network resources.

Endpoint Protection describes how you can enforce the use of FortiClient Endpoint Control and apply an endpoint profile to users’ devices. Endpoint profiles include real-time antivirus protection, application control, web category filtering, and VPN provisioning.

Vulnerability Scan describes how perform network vulnerability scanning to look for security weaknesses in your servers and workstations.

Managing “bring your own device”

FortiOS can control network access for different types of personal mobile devices that your employees bring onto your premises. You can:

- identify and monitor the types of devices connecting to your networks, wireless or wired
- use MAC address based access control to allow or deny individual devices
- create security policies that specify device types
- enforce endpoint control on devices that can run FortiClient Endpoint Control software

Device monitoring

The FortiGate unit can monitor your networks and gather information about the devices operating on those networks. Collected information includes:

- MAC address
- IP address
- operating system
- hostname
- user name
- how long ago the device was detected and on which FortiGate interface

You can go to *User & Device* > *Device* > *Device Definitions* to view this information.

Mouse-over the *Device* column for more details.

Device monitoring is enabled separately on each interface. Device detection is intended for devices directly connected to your LAN ports. If enabled on a WAN port, device detection may be unable to determine the operating system on some devices.

To configure device monitoring

1. Go to *System* > *Network* > *Interfaces*.
2. Edit the interface that you want to monitor devices on.
3. In *Device Management*, select *Detect and Identify Devices*.
4. Select *OK*.
5. Repeat steps 2 through 4 for each interface that will monitor devices.

For ease in identifying devices, Fortinet recommends that you assign each device an Alias.

To assign an alias to a detected device or change device information

1. Go to *User & Device* > *Device* > *Device Definitions.*
2. Double-click the device entry or right-click it and select *Edit*.
3. Enter an *Alias* such as the user's name to identify the device.

   This is step is compulsory. The alias replaces the MAC address in the device list.
4. Change other information as needed.
5. Select *OK*.

To add a device manually

1. Go to *User & Device* > *Device* > *Device Definitions* and select *Create New*.
2. Enter the following information.
   - Alias (required)
   - MAC address
   - Device Type
3. Optionally, add the device to *Custom Groups*.
4. Optionally, enter *Comments*.
5. Select *OK*.

Device Groups

You can specify multiple device types in a security policy. As an alternative, you can add multiple device types to a custom device group and include the group in the policy. This enables you to create a different policy for devices that you know than for devices in general.

To create a custom device group and add devices to it

1. Go to *User & Device* > *Device* > *Device Groups.*

   The list of device groups is displayed.
2. Select *Create New*.
3. Enter a *Name* for the new device group.
4. Click in the *Members* field and click a device type to add. Repeat to add other devices.
5. Select *OK*.

Controlling access with a MAC Address Access Control List

A MAC Address Access Control List (ACL) allows or blocks access on a network interface that includes a DHCP server. If the interface does not use DHCP, or if you want to limit network access to a larger group such as employee devices, it is better to create a device group and specify that group in your security policies.

A MAC Address ACL functions as either a list of blocked devices or a list of allowed devices. This is determined by the *Unknown MAC Address* entry.

- By default, the ACL is a list of blocked devices. The *Unknown MAC Address* entry *Action* is *Assign IP*. You add an entry for each MAC address that you want to block and set its *Action* to *Block*.
- If you want the ACL to allow only a limited set of devices, you set the *Unknown MAC Address* entry to *Block*. Then, add the MAC address of each allowed device. Set *Action* to

Assign IP. Optionally, you can set *Action* to *Reserve* and enter the IP address that will always be assigned to the device.

To create a MAC Address ACL to allow only specific devices

1. Go to the SSID or network interface configuration.
2. In the *DHCP Server* section, expand *Advanced*.

   DHCP Server must be enabled.
3. In *MAC Reservation + Access Control,* select *Create New* and enter an allowed device's *MAC Address*.
4. In the *IP or Action* column, select one of:
   - Assign IP — device is assigned an IP address from the DHCP server address range.
   - Reserve IP — device is assigned the IP address that you specify.
5. Repeat Steps 3 and 4 for each additional MAC address entry.
6. Set the *Unknown MAC Address* entry *IP or Action* to *Block*.
7. Select *OK*.

To create a MAC Address ACL to block specific devices

1. Go to the SSID or network interface configuration.
2. In the *DHCP Server* section, expand *Advanced*.

   DHCP Server must be enabled.
3. In *MAC Reservation + Access Control,* select *Create New* and enter a blocked device's *MAC Address*.
4. In the *IP or Action* column, select *Block*.
5. Repeat Steps 3 and 4 for each additional MAC address entry.
6. Set the *Unknown MAC Address* entry *IP or Action* to *Assign IP*.
7. Select *OK*.

Security policies for devices

Security policies enable you to implement policies according to device type. For example:

- Gaming consoles cannot connect to the company network or the Internet.
- Personal tablet and phone devices can connect to the Internet but not to company servers.
- Company-issued laptop computers can connect to the Internet and company servers. Web filtering and antivirus are applied.
- Employee laptop computers can connect to the Internet, but web filtering is applied. They can also connect to company networks, but only if FortiClient Endpoint Security is installed to protect against viruses.

Figure 1 and Figure 2 show these policies implemented for WiFi to the company network and to the Internet.

Figure 1: Device policies for company laptop access to the company network

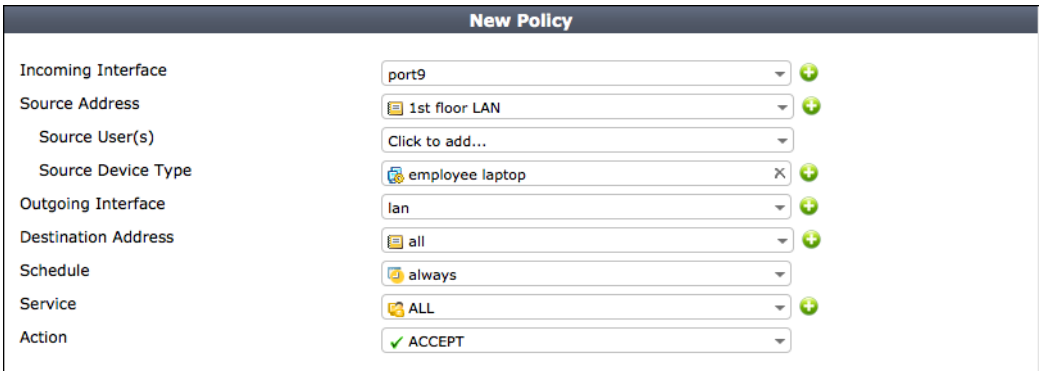
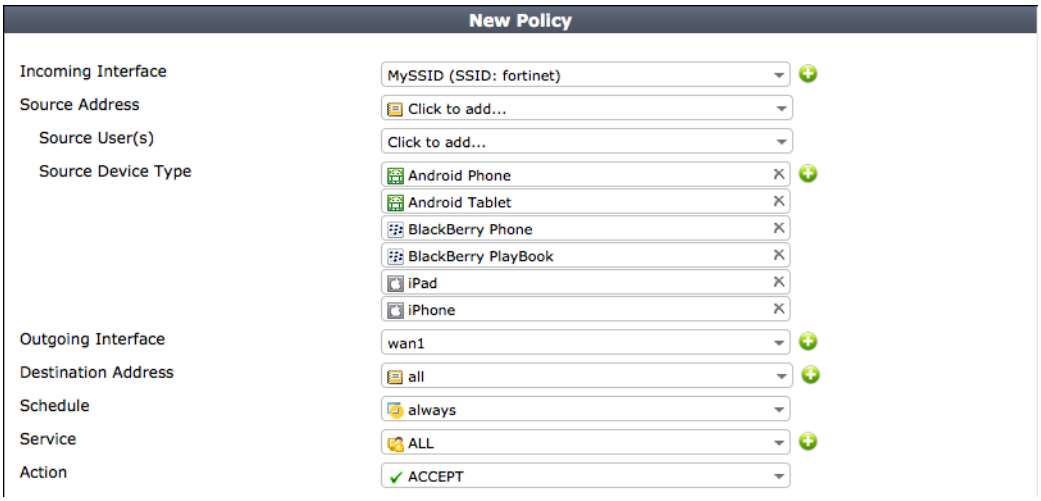


Figure 2: Device policies for WiFi access to the Internet



The next section explains device policy creation in detail.

Creating device policies

Device-based security policies are similar to policies based on user identity:

- The policy enables traffic to flow from one network interface to another.
- NAT can be enabled.
- UTM protection can be applied.

To create a device policy

1. Go to *Policy & Objects* > *Policy* > *IPv4* and select *Create New*.
2. Choose *Incoming Interface*, *Source Address*, and *Outgoing Interface* as you would for any security policy.
3. In Source Device Type, select the device types that can use this policy.

   You can select multiple devices or device groups.
4. Select *Enable NAT* if appropriate.
5. Configure *UTM Security Profiles* as you would for any security policy.
6. Select *OK*.

Adding endpoint protection

Optionally, you can require that users' devices have FortiClient Endpoint Security software installed. FortiOS pushes a FortiClient profile out to the FortiClient software, configuring network protection such as antivirus, application control, and web category filtering. Devices without an up-to-date installation of FortiClient software are restricted to a captive portal from which the user can download a FortiClient installer. For information about creating FortiClient profiles, see "Endpoint Protection" on page 10.

To add endpoint protection to a security policy

1. Go to *Policy & Objects* > *Policy* > *IPv4* and edit the policy.
2. In *Firewall* / *Network Options* set *Compliant with FortiClient Profile* to *ON*.

   The policy must have device types or gevice groups in the *Source Device Type* field.

Endpoint Protection

This section describes the Endpoint Protection feature and how to configure it.

The following topics are included in this section:

Endpoint Protection overview

Endpoint Protection enforces the use of up-to-date FortiClient Endpoint Security software on endpoints (workstation computers and mobile devices). It pushes a FortiClient profile to the FortiClient application, specifying security settings, including:

- Real-time antivirus protection - on or off
- FortiClient web category filtering based on web filters defined in a FortiGate web filter profile
- FortiClient application control (application firewall) using application sensors defined in the FortiGate application control feature

The FortiClient profile can also specify:

- VPN configurations
- Configuration profile (.mobileconfig file for iOS)
- Dashboard banner

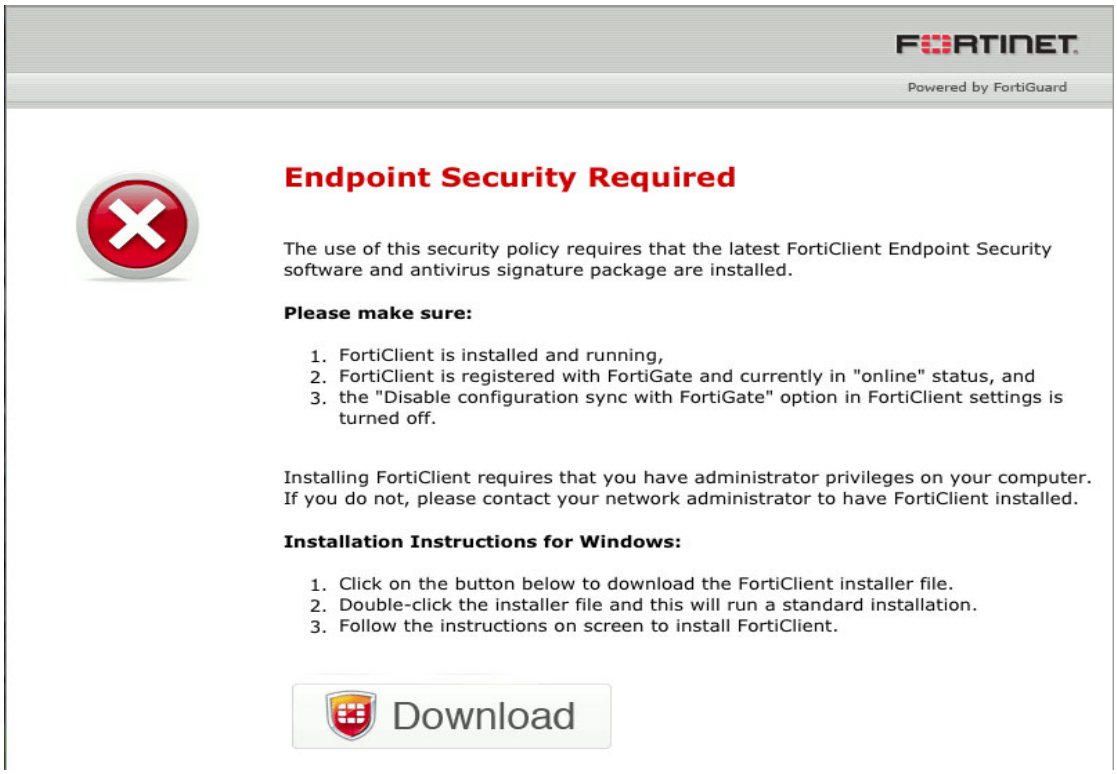
You enable Endpoint Security in security policies by enabling *Compliant with FortiClient Profile*. The policy must specify at least one device type.

User experience

When using a web browser, the user of a non-compliant endpoint receives a replacement message HTML page from the FortiGate unit. The message explains that the user needs to install FortiClient Endpoint Security and provides a link to do so. The user cannot continue until the FortiClient software is installed.

For information about modifying the replacement page, see “Modifying the Endpoint Protection replacement messages” on page 17.

Figure 3: Default FortiClient non-compliance message for Windows



After installing FortiClient Endpoint Security, the user will receive an invitation to register with the FortiGate unit. If the user accepts the invitation, the FortiClient profile is sent to the device's FortiClient application. Now the user is compliant with the security policy and can connect to the network. FortiClient Endpoint Security registered with a FortiGate unit does not need to be separately licensed with FortiGuard.

The FortiGate unit can also register endpoints who connect over the Internet through a VPN. The user can accept an invitation to register with the FortiGate unit. See “Configuring endpoint registration over a VPN” on page 15.

FortiGate endpoint registration limits

To view the number of endpoints that are registered and the total that can be registered, go to *System* > *Dashboard* > *Status*. Under *License Information*, find *FortiClient Software*. You will see a line like “Registered/Allowed 4 of 10”. This means that there are four registered endpoints and a total of ten are allowed.

When the registration limit is reached, the next FortiClient-compatible device will not be able to register with the FortiGate unit. The user sees a message in FortiClient application about this. The FortiClient profile is not sent to client and the client cannot connect through the FortiGate unit.

For all FortiGate models, the maximum number of registered endpoints is ten. For all models except 20C, you can purchase an endpoint license to increase this capacity:

To add an endpoint license - web-based manager

1. Go to *System* > *Dashboard* > *Status*.

2. In the *License Information* widget, under *FortiClient*, select *Enter License*, enter the license key, and select *OK*.

Table 1: Maximum registered endpoints with endpoint license

Model type	Max Registered Endpoints
30 to 90 series	200
100 to 300 series	600
500 to 800 series, VM1, VM2	2 000
1000 series, VM4	8 000
3000 to 5000 series, VM8	20 000

Configuration overview

Endpoint Protection requires that all hosts using the firewall policy have the FortiClient Endpoint Security application installed. Make sure that all hosts affected by this policy are able to install this application. Currently, FortiClient Endpoint Security is available for Microsoft Windows (2000 and later) and Apple Mac OSX only.

To set up Endpoint Protection, you need to

- By default, the FortiGuard service provides the FortiClient installer. If you prefer to host it on your own server, see "Changing the FortiClient installer download location" on page 12.
- In Security Profiles, configure application sensors and web filter profiles as needed to monitor or block applications. See the Security Profiles Guide chapter of the FortiOS Handbook for details.
- Create a FortiClient profile or use the default profile. See "Creating a FortiClient profile" on page 13. Enable the application sensor and web category filtering profiles that you want to use.
- Enable *Compliant with FortiClient Profile* in the security policies that the endpoints will use.
- Create the registration key for users to register their device with the FortiGate unit.
- Optionally, configure the FortiGate unit to support endpoint registration by IPsec or SSL VPN.
- Optionally, modify the *Endpoint NAC Download Portal* replacement messages (one per platform).

Changing the FortiClient installer download location

By default, FortiClient installers are downloaded from the FortiGuard network. You can also host these installers on a server for your users to download. In that case, you must configure FortiOS with this custom download location. For example, to set the download location to a customer web server with address custom.example.com, enter the following command:

```
config endpoint-control settings
  set download-location custom
  set download-custom-link "http://custom.example.com"
end
```

Creating a FortiClient profile

There is a default FortiClient profile for Windows and Mac OS that enables only AntiVirus, Web Filtering, and VPN. You can modify this profile or create your own FortiClient profiles.

Except for the default profile, each FortiClient profile is assigned to particular device groups, and optionally to particular users and user groups. If no other FortiClient profile is assigned to a particular device type, the default profile applies. It is possible for more than one profile to be assigned to a device type. As with security policies, clients are matched to FortiClient profiles in the order that the profiles appear in the list.

When *Compliant with FortiClient Profile* is selected in the security policy, all users of that policy must have FortiClient Endpoint Security installed. The FortiGate unit pushes the FortiClient profile settings to the FortiClient application on the client.

To create a FortiClient profile - web-based manager

1. If you will use the Application Firewall feature, go to *Security Profiles* > *Application Control* to create the Application Sensors that you will need.
2. If you will use Web Category Filtering, go to *Security Profiles* > *Web Filter* to create the web filter profile that you will need.
3. Go to *User & Device* > *FortiClient Profiles*.

   If there is only the default FortiClient profile, it is displayed, ready to edit. At the top right of the page you can select or create other profiles.
4. Select *Create New* or select an existing profile and *Edit* it.
5. In *Assign Profile To*, select the device groups, user groups, and users to which this FortiClient profile applies. This is not available for the default profile.
6. Enter the *FortiClient Configuration Deployment* settings for *Windows and Mac*:

Antivirus Protection	ON — enable the FortiClient realtime AntiVirus feature.
Web Category Filtering	ON — enable web category filtering. Select the web filter profile to use.
VPN	ON - enable VPN use by FortiClient.
Client VPN Provisioning	Enable to configure the FortiClient VPN client. Enter the VPN configuration details.
Application Firewall	ON — enable application control. Select the application sensor to use.
Use FortiManager for client software/signature update	ON — FortiClient software obtain AV signatures and software updates from the specified FQDN or IP address. *Failover to FDN when FortiManager is not available* is enabled by default.
Dashboard Banner	ON — Display dashboard banner.

7. Enter the *FortiClient Configuration Deployment* settings for *iOS*:

Web Category Filtering	ON — enable web category filtering. Select the web filter profile to use.
Client VPN Provisioning	Enable to configure the FortiClient VPN client. You can enter multiple VPN configurations by selecting the “+” button.

	VPN Name	Enter a name to identify this VPN configuration in the FortiClient application.
	Type	Select *IPsec* or *SSL-VPN*. If you select *IPsec*, select a *VPN Configuration File* that contains the required IPsec VPN configuration. The Apple iPhone Configuration Utility produces .mobileconfig files which contain configuration information for an iOS device. If you select *SSL-VPN*, enter the VPN configuration details.
Distribute Configuration Profile		ON — Distribute configuration information to iOS devices running FortiClient Endpoint Security. Select *Browse* and locate the file to be distributed. The Apple iPhone Configuration Utility produces .mobileconfig files which contain configuration information for an iOS device.

8. Enter the *FortiClient Configuration Deployment* settings for *Android*:

Web Category Filtering		ON — enable web category filtering. Select the web filter profile to use.
	Disable Web Category Filtering when protected by this FortiGate	Disables FortiClient web category filtering when client traffic is filtered by the FortiGate unit. Selected by default.
Client VPN Provisioning		Enable to configure the FortiClient VPN client. You can enter multiple VPN configurations by selecting the “+” button.
	VPN Name	Enter a name to identify this VPN configuration in the FortiClient application.
	Type	Select *IPsec* or *SSL-VPN*. Enter the VPN configuration details.

9. Select *OK*.

To create a FortiClient profile - CLI

This example creates a profile for Windows and Mac computers.

```
config endpoint-control profile
  edit ep-profile1
    set device-groups mac windows-pc
    config forticlient-winmac-settings
      set forticlient-av enable
      set forticlient-wf enable
      set forticlient-wf-profile default
    end
  end
```

Creating the registration key

To register their endpoint devices with the FortiGate unit, users must enter a registration key that you create and provide to them.

To create the FortiClient Endpoint Registration key

1. Go to *System* > *Config* > *Advanced*.
2. Enable *FortiClient Endpoint Registration* and enter the key.

   You can create a key containing up to 127 alphanumeric characters.
3. Select *Apply*.

Enabling Endpoint Protection in security policies

Endpoint Protection is applied to any traffic where the controlling firewall policy has Endpoint Security enabled. The device group to which the device belongs determines which FortiClient profile is applied. The policy searches the list of FortiClient profiles starting from the top and applies the first profile assigned to the device group.

To enable Endpoint Protection - web-based manager

1. Go to *Policy & Objects* > *Policy* > *IPv4* and edit the security policy where you want to enable Endpoint Protection.

   The policy must specify at least one *Source Device Type*.
2. Select *Compliant with FortiClient profile*.
3. Select *OK*.

To configure the firewall policy - CLI

In this example, the LAN connects to Port 2 and the Internet is connected to Port 1. a FortiClient profile is applied.

```
config firewall policy
  edit 0
    set srcintf port2
    set dstintf port1
    set srcaddr LANusers
    set dstaddr all
    set devices employee\ laptop
    set schedule always
    set service ALL
    set devices all
    set action accept
    set nat enable
    set endpoint-compliance enable
  end
```

Configuring endpoint registration over a VPN

FortiGate units can register FortiClient-equipped endpoints over either an interface-based IPsec VPN or a tunnel-mode SSL VPN. After the user authenticates, the FortiGate unit sends the FortiClient application the IP address and port to be used for registration. If the user accepts the

FortiGate invitation to register, registration proceeds and the FortiClient profile is downloaded to the client.

Users without FortiClient Endpoint Security connecting to the SSL VPN through a browser are redirected to a captive portal to download and install the FortiClient software.

Endpoint registration on an IPsec VPN

You can enable endpoint registration when you configure the FortiClient VPN or you can enable it on an existing FortiClient VPN.

To enable endpoint registration while configuring the VPN

- Enable *Allow Endpoint Registration* on the Policy & Routing page of the VPN Wizard when creating the FortiClient VPN.

To enable endpoint registration on an existing VPN

1. Go to *System* > *Network* > *Interfaces* and edit the VPN's tunnel interface.

   The tunnel is a subinterface of the physical network interface.
2. In *Administrative Access*, make sure that *FCT-Access* is enabled.
3. Select OK.

Endpoint registration on the SSL VPN

To enable endpoint registration on the SSL VPN

1. Go to *VPN* > *SSL* > *Settings.*
2. In *Tunnel Mode Client Settings*, make sure *Allow Endpoint Registration* is enabled.
3. Select *Apply*.

This procedure does not include all settings needed to configure a working SSL VPN.

Synchronizing endpoint registrations

To support roaming users in a network with multiple FortiGate units, you need to configure synchronization of the endpoint registration databases between the units. The registered endpoints are then recognized on all of the FortiGate units. This is configured in the CLI. For example, to synchronize this FortiGate unit's registered endpoint database with another unit named `other1` at IP address 172.20.120.4, enter:

```
config endpoint-control forticlient-registration-sync
  edit other1
    set peer-ip 172.20.120.4
  end
```

Monitoring endpoints

Go to *User & Device* > *Monitor* > *FortiClient* to monitor endpoints.

Modifying the Endpoint Protection replacement messages

If the security policy has *Redirect all non-compliant/unregistered FortiClient compatible devices to a captive portal* enabled, users of non-compliant devices are redirected to a captive portal that is defined by the *Endpoint NAC Download Portal* replacement message. There are different portals for Android, iOS, Mac, Windows, and “other” devices. Optionally, you can modify them.

To modify the Endpoint NAC Download Portal

1. Go to *System* > *Config* > *Replacement Message Group* and select *Extended View*.
2. In the *Endpoint Control* section select the message that you want to edit.

   The replacement message and its HTML code appear in a split screen in the lower half of the page.
3. Modify the text as needed and select *Save*.

Vulnerability Scan

The Network Vulnerability Scan helps you to protect your network assets (servers and workstations) by scanning them for security weaknesses. You can scan on-demand or on a scheduled basis. Results are viewable on the FortiGate unit, but results are also sent to an attached FortiAnalyzer unit. The FortiAnalyzer unit can collect the results of vulnerability scans from multiple FortiGate units at different locations on your network, compiling a comprehensive report about network security.

This section describes how to configure a single FortiGate unit for network scanning and how to view the results of the scan.

The following topics are included in this section:

Configuring vulnerability scans

You can configure the scan schedule and the assets to be scanned.

To configure scanning - web-based manager

1. Go to *User & Device* > *Vulnerability Scan* > *Scan Definition*.
2. Beside *Schedule* select *Change* to set the scan schedule and mode:

Recurrence	Select *Daily*, *Weekly*, or *Monthly* and configure the details for the option you have selected.
Suspend Scan between	Set a time during which the scan should be paused if its running. (Optional)
Vulnerability Scan Mode	**Quick** — check only the most commonly used ports **Standard** — check the ports used by most known applications **Full** — check all TCP and UDP ports For a detailed list of the TCP and UDP ports examined by each scan mode, see Table 2 on page 23.

3. Select *Apply* to save the schedule and scan type.
4. *n Asset Definitions*, select *Create New* to enter the devices on the network to scan.

   An asset can be a single server or workstation computer on your network or a range of addresses on your network. You must add assets to the vulnerability scan before you can run a scan.

   To scan an entire network or part of a network you can just add the appropriate IP address range to the asset configuration. You can also add the IP addresses of Windows and Linux computers and include the authentication credentials for these machines. The vulnerability scanner will use these credentials to log into the computers and do more detailed vulnerability scanning.

Even if the asset is an address range you can add Windows and Linux credentials. The vulnerability scanner will attempt to log into all network device it finds using these credentials.

5. Enter the following asset information and select *OK*:

Name	Enter a name for this asset.
Type	Select *IP Address* to add a single IP address. Select *Range* to add a range of IP addresses to scan.
IP Address	Enter the IP address of the asset. (*Type* is *IP Address*.)
Range	Enter the start and end of the IP address range. (*Type* is *Range*.)
Enable Scheduled Vulnerability Scanning	Select to allow this asset to be scanned according to the schedule. Otherwise the asset is not scanned during a scheduled vulnerability scan.
Windows Authentication	Select to use authentication on a Windows operating system. Enter the username and password in the fields provided. For more information, see "Requirements for authenticated scanning and ports scanned" on page 20.
Unix Authentication	Select to use authentication on a Unix operating system. Enter the username and password in the fields provided. For more information, see "Requirements for authenticated scanning and ports scanned" on page 20.

6. Select *Apply* to save the configuration.

To configure scanning - CLI

To configure, for example, a standard scan to be performed every Sunday at 2:00am, you would enter:

```
config netscan settings
  set scan-mode standard
  set schedule enable
  set time 02:00
  set recurrence weekly
  set day-of-week sunday
end
```

To add an asset - CLI

This example adds a single computer to the Asset list:

```
config netscan assets
  edit 0
    set name "server1"
    set addr-type ip
    set start-ip 10.11.101.20
    set auth-windows enable
    set win-username admin
    set win-password zxcvbnm
```

```
    set scheduled enable
  end
```

This example adds an address range to the Asset list. Authentication is not used:

```
config netscan assets
  edit 0
    set name "fileservers"
    set addr-type range
    set start-ip 10.11.101.160
    set end-ip 10.11.101.170
    set scheduled enable
  end
```

Running a vulnerability scan and viewing scan results

To run a vulnerability scan - web-based manager

1. Go to *User & Device* > *Vulnerability Scan* > *Scan Definition* and select *Start Scan*.

   When the scan is running you can pause or stop it at any time. You can also watch the progress of the scan.
2. When the scan is complete go to *User & Device* > *Vulnerability Scan* > *Vulnerability Result* to view the results of the scan.

To run a vulnerability scan - CLI

Use the following CLI commands:

```
execute netscan start scan
execute netscan status
execute netscan pause
execute netscan resume
execute netscan stop
```

To view vulnerability scan results

1. To view vulnerability scan results go to *User & Device* > *Vulnerability Scan* > *Vulnerability Result*.
2. Select any log entry to view log details.

Requirements for authenticated scanning and ports scanned

The effectiveness of an authenticated scan is determined by the level of access the FortiGate unit obtains to the host operating system. Rather than use the system administrator's account, it might be more convenient to set up a separate account for the exclusive use of the vulnerability scanner with a password that does not change.

The following sections detail the account requirements for various operating systems.

Microsoft Windows hosts - domain scanning

The user account provided for authentication must

- have administrator rights
- be a Security type of account
- have global scope
- belong to the Domain Administrators group
- meet the Group Policy requirements listed below:

Group Policy - Security Options

In the Group Policy Management Editor, go to Computer Configuration > Windows Settings > Security Settings > Local Policies > Security Options.

Setting	Value
Network access: Sharing and security model for local accounts	Classic
Accounts: Guest account status	Disabled
Network access: Let Everyone permissions apply to anonymous users	Disabled

Group Policy - System Services

In the Group Policy Management Editor, go to Computer Configuration > Windows Settings > Security Settings > System Services.

Setting	Value
Remote registry	Automatic
Server	Automatic
Windows Firewall	Automatic

Group Policy - Administrative Templates

In the Group Policy Management Editor, go to Computer Configuration > Administrative Templates > Network > Network Connections > Windows Firewall > Domain Profile.

Setting	Value
Windows Firewall: Protect all network connections	Disabled

or

Setting	Value
Windows Firewall: Protect all network connections	Enabled
Windows Firewall: Allow remote administration exception	Enabled
Allow unsolicited messages from[1]	*

Windows Firewall: Allow file and printer sharing exception	Enabled
Allow unsolicited messages from[1]	*
Windows Firewall: Allow ICMP exceptions	Enabled
Allow unsolicited messages from[1]	*

[1]Windows prompts you for a range of IP addresses. Enter either "*" or the IP address of the Fortinet appliance that is performing the vulnerability scan.

Microsoft Windows hosts - local (non-domain) scanning

The user account provided for authentication must

- be a local account
- belong to the Administrators group

The host must also meet the following requirements:

- Server service must be enabled. (Windows 2000, 2003, XP)
- Remote Registry Service must be enabled.
- File Sharing must be enabled.
- Public folder sharing must be disabled. (Windows 7)
- Simple File Sharing (SFS) must be disabled. (Windows XP)

Windows firewall settings

- Enable the *Remote Administration Exception* in Windows Firewall. (Windows 2003, Windows XP)
- Allow *File and Print sharing* and *Remote Administration* traffic to pass through the firewall. Specify the IP address or subnet of the Fortinet appliance that is performing the vulnerability scan. (Windows Vista, 2008)
- For each of the active *Inbound Rules* in the *File and Printer Sharing* group, set the *Remote IP address* under *Scope* to either *Any IP address* or to the IP address or subnet of the Fortinet appliance that is performing the vulnerability scan. (Windows 7)

Unix hosts

The user account provided for authentication must be able at a minimum to execute these commands:

- The account must be able to execute "uname" in order to detect the platform for packages.
- If the target is running Red Hat, the account must be able to read /etc/redhat-release and execute "rpm".
- If the target is running Debian, the account must be able to read /etc/debian-version and execute "dpkg".

Table 2: Ports scanned in each scan mode

Scan Type	Ports scanned
Standard Scan	***TCP:*** 1-3, 5, 7, 9, 11, 13, 15, 17-25, 27, 29, 31, 33, 35, 37-39, 41-223, 242-246, 256-265, 280-282, 309, 311, 318, 322-325, 344-351, 363, 369-581, 587, 592-593, 598, 600, 606-620, 624, 627, 631, 633-637, 666-674, 700, 704-705, 707, 709-711, 729-731, 740-742, 744, 747-754, 758-765, 767, 769-777, 780-783, 786, 799-801, 860, 873, 886-888, 900-901, 911, 950, 954-955, 990-993, 995-1001, 1008, 1010-1011, 1015, 1023-1100, 1109-1112, 1114, 1123, 1155, 1167, 1170, 1207, 1212, 1214, 1220-1222, 1234-1236, 1241, 1243, 1245, 1248, 1269, 131t3-1314, 1337, 1344-1625, 1636-1774, 1776-1815, 1818-1824, 1901-1909, 1911-1920, 1944-1951, 1973, 1981, 1985-2028, 2030, 2032-2036, 2038, 2040-2049, 2053, 2065, 2067, 2080, 2097, 2100, 2102-2107, 2109, 2111, 2115, 2120, 2140, 2160-2161, 2201-2202, 2213, 2221-2223, 2232-2239, 2241, 2260, 2279-2288, 2297, 2301, 2307, 2334, 2339, 2345, 2381, 2389, 2391, 2393-2394, 2399, 2401, 2433, 2447, 2500-2501, 2532, 2544, 2564-2565, 2583, 2592, 2600-2605, 2626-2627, 2638-2639, 2690, 2700, 2716, 2766, 2784-2789, 2801, 2908-2912, 2953-2954, 2998, 3000-3002, 3006-3007, 3010-3011, 3020, 3047-3049, 3080, 3127-3128, 3141-3145, 3180-3181, 3205, 3232, 3260, 3264, 3267-3269, 3279, 3306, 3322-3325, 3333, 3340, 3351-3352, 3355, 3372, 3389, 3421, 3454-3457, 3689-3690, 3700, 3791, 3900, 3984-3986, 4000-4002, 4008-4009, 4080, 4092, 4100, 4103, 4105, 4107, 4132-4134, 4144, 4242, 4321, 4333, 4343, 4443-4454, 4500-4501, 4567, 4590, 4626, 4651, 4660-4663, 4672, 4899, 4903, 4950, 5000-5005, 5009-5011, 5020-5021, 5031, 5050, 5053, 5080, 5100-5101, 5145, 5150, 5190-5193, 5222, 5236, 5300-5305, 5321, 5400-5402, 5432, 5510, 5520-5521, 5530, 5540, 5550, 5554-5558, 5569, 5599-5601, 5631-5632, 5634, 5678-5679, 5713-5717, 5729, 5742, 5745, 5755, 5757, 5766-5767, 5800-5802, 5900-5902, 5977-5979, 5997-6053, 6080, 6103, 6110-6112, 6123, 6129, 6141-6149, 6253, 6346, 6387, 6389, 6400, 6455-6456, 6499-6500, 6515, 6558, 6588, 6660-6670, 6672-6673, 6699, 6767, 6771, 6776, 6831, 6883, 6912, 6939, 6969-6970, 7000-7021, 7070, 7080, 7099-7100, 7121, 7161, 7174, 7200-7201, 7300-7301, 7306-7308, 7395, 7426-7431, 7491, 7511, 7777-7778, 7781, 7789, 7895, 7938, 7999-8020, 8023, 8032, 8039, 8080-8082, 8090, 8100, 8181, 8192, 8200, 8383, 8403, 8443, 8450, 8484, 8732, 8765, 8886-8894, 8910, 9000-9001, 9005, 9043, 9080, 9090, 9098-9100, 9400, 9443, 9535, 9872-9876, 9878, 9889, 9989-10000, 10005, 10007, 10080-10082, 10101, 10520, 10607, 10666, 11000, 11004, 11223, 12076, 12223, 12345-12346, 12361-12362, 12456, 12468-12469, 12631, 12701, 12753, 13000, 13333, 14237-14238, 15858, 16384, 16660, 16959, 16969, 17007, 17300, 18000, 18181-18186, 18190-18192, 18194, 18209-18210, 18231-18232, 18264, 19541, 20000-20001, 20011, 20034, 20200, 20203, 20331, 21544, 21554, 21845-21849, 22222, 22273, 22289, 22305, 22321, 22555, 22800, 22951, 23456, 23476-23477, 25000-25009, 25252, 25793, 25867, 26000, 26208, 26274, 27000-27009, 27374, 27665, 29369, 29891, 30029, 30100-30102, 30129, 30303, 30999, 31336-31337, 31339, 31554, 31666, 31785, 31787-31788, 32000, 32768-32790, 33333, 33567-33568, 33911, 34324, 37651, 40412, 40421-40423, 42424, 44337, 47557, 47806, 47808, 49400, 50505, 50766, 51102, 51107, 51112, 53001, 54321, 57341, 60008, 61439, 61466, 65000, 65301, 65512 ***UDP:*** 7, 9, 13, 17, 19, 21, 37, 53, 67-69, 98, 111, 121, 123, 135, 137-138, 161, 177, 371, 389, 407, 445, 456, 464, 500, 512, 514, 517-518, 520, 555, 635, 666, 858, 1001, 1010-1011, 1015, 1024-1049, 1051-1055, 1170, 1243, 1245, 1434, 1492, 1600, 1604, 1645, 1701, 1807, 1812, 1900, 1978, 1981, 1999, 2001-2002, 2023, 2049, 2115, 2140, 2801, 3024, 3129, 3150, 3283, 3527, 3700, 3801, 4000, 4092, 4156, 4569, 4590, 4781, 5000-5001, 5036, 5060, 5321, 5400-5402, 5503, 5569, 5632, 5742, 6073, 6502, 6670, 6771, 6912, 6969, 7000, 7300-7301, 7306-7308, 7778, 7789, 7938, 9872-9875, 9989, 10067, 10167, 11000, 11223, 12223, 12345-12346, 12361-12362, 15253, 15345, 16969, 20001, 20034, 21544, 22222, 23456, 26274, 27444, 30029, 31335, 31337-31339, 31666, 31785, 31789, 31791-31792, 32771, 33333, 34324, 40412, 40421-40423, 40426, 47262, 50505, 50766, 51100-51101, 51109, 53001, 61466, 65000

Table 2: Ports scanned in each scan mode

Scan Type	Ports scanned
Full Scan	All TCP and UDP ports (1-65535)
Quick Scan	***TCP:*** 11, 13, 15, 17, 19-23, 25, 37, 42, 53, 66, 69-70, 79-81, 88, 98, 109-111, 113, 118-119, 123, 135, 139, 143, 220, 256-259, 264, 371, 389, 411, 443, 445, 464-465, 512-515, 523-524, 540, 548, 554, 563, 580, 593, 636, 749-751, 873, 900-901, 990, 992-993, 995, 1080, 1114, 1214, 1234, 1352, 1433, 1494, 1508, 1521, 1720, 1723, 1755, 1801, 2000-2001, 2003, 2049, 2301, 2401, 2447, 2690, 2766, 3128, 3268-3269, 3306, 3372, 3389, 4100, 4443-4444, 4661-4662, 5000, 5432, 5555-5556, 5631-5632, 5634, 5800-5802, 5900-5901, 6000, 6112, 6346, 6387, 6666-6667, 6699, 7007, 7100, 7161, 7777-7778, 8000-8001, 8010, 8080-8081, 8100, 8888, 8910, 9100, 10000, 12345-12346, 20034, 21554, 32000, 32768-32790 ***UDP:*** 7, 13, 17, 19, 37, 53, 67-69, 111, 123, 135, 137, 161, 177, 407, 464, 500, 517-518, 520, 1434, 1645, 1701, 1812, 2049, 3527, 4569, 4665, 5036, 5060, 5632, 6502, 7778, 15345

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